

Date: Thursday, 5/3/2007 11:23:54 AM  
 User: Kim Johnston

## Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : 350/355 AS X-TUBE FWD UNDER REVIEW
Job Number : 32154	
Estimate Number : 12485	
P.O. Number : <i>N/A</i>	Part Number : D350748101
This Issue : 5/3/2007 S.O. No. : <i>NA</i>	Drawing Number : <del>UNDER REVIEW</del> <i>DL 02.05.10</i>
Prsht Rev. : NC	Project Number : N/A
First Issue : <i>N/A</i> Type : LANDING GEAR	Drawing Revision : N/A
Previous Run : 32153	Material : <i>NA</i>
Written By : _____	Due Date : 6/10/2007 Qty: 1 Um: Each
Checked & Approved By : <i>07.05.03</i>	
Comment : Est Rev: A New Issue 06-07-05 JLM	
Est Rev: B Update qty of MS21042L5 06-09-12 KJ	

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	DC	DOCUMENT CONTROL
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*KS 07.05 31*

Comment: Photocopy bluefile & type labels per PPPD350-748-101	CHG001
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2.0	32154A	X-TUBE AS 350/355 HI FWD UNDER REVIEW
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Comment: Sub-Component X-TUBE AS 350/355 HI FWD
D350-748-141 B <i>32104A</i>

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1
Pick Packing Kit

4.0	D35001	350 SADDLE
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Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
350 SADDLE
Batch: <i>1331076</i>

*SP*

5.0	D35011	BUSHING
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Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)
BUSHING <i>1331077</i>
Batch: <i>1331077</i>

*7/11/14 SP*

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

Date: Thursday, 5/3/2007 11:23:54 AM  
User: Kim Johnston

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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE FWD UNDER REVIEW

Job Number: 32154

Part Number: D350748101

Job Number:



Seq. #:

Machine Or Operation:

Description :

6.0

AN46A

Bolt



Comment: Qty.: 16.0000 Each(s)/Unit Total : 16.0000 Each(s)

Bolt

Batch: M104322

SP

7.0

AN441A

bolt



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

bolt

Batch: M105941

SP

8.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Bolt

Batch: M104679 M104936

SP

9.0

AN960JD416

Washer



Comment: Qty.: 32.0000 Each(s)/Unit Total : 32.0000 Each(s)

Washer

Batch: M105426

SP

10.0

AN960JD516

Washer



Comment: Qty.: 8.0000 Each(s)/Unit Total : 8.0000 Each(s)

Washer

Batch: M104156

SP

11.0

MS21042L4

Nut



Comment: Qty.: 24.0000 Each(s)/Unit Total : 24.0000 Each(s)

Nut

Batch: M105054

SP

12.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Nut

Batch: M105430

7-11-14 SP 1x

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: D Date: 07/11/15  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 5/3/2007 11:23:54 AM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 350/355 AS X-TUBE FWD UNDER REVIEW

Job Number: 32154

Part Number: D350748101

Job Number:



Seq. #:

Machine Or Operation:

Description :

13.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



*7/11/14*



Comment: INSPECT 100% KITS FOR COMPLETENESS

14.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-101

Location:

PPP Rev:

*PPP A*

*[Signature]*

*AS 7/11/14*

15.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

*[Signature]* *7/11/15*

Job Completion



*U 5/11/15*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

* Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: X-TUBE AS 350/355 HI FWD UNDER REVIEW
* Job Number	: 32154A		
Estimate Number	: 12484		
P.O. Number	: N/A	Part Number	: D350748141
* This Issue	: 5/3/2007 S.O. No. : N/A	Drawing Number	: D350-748-141 LWR
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: N/A Type : LANDING GEAR	Drawing Revision	: 8P
Previous Run	: 32153A	Material	: N/A
Written By	:	Due Date	: 6/10/2007
Checked & Approved By	:	Qty:	1 Um: Each
Comment	: Est Rev: A New Issue 06-07-05 JLM Est Rev: B Update cadplate process 06-09-12 KJ		

\_\_\_\_\_

1.0 DC DOCUMENT CONTROL



Photocopy bluefile and create labels as per PPP D350-748-141 CHG001

2.0	D6017115	Crosstube Material
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Batch: 27471

3.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE
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3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D350-748-141.

4.0 QC1 INSPECT ALL DIM TO DIM SHEET



**Comment:** INSPECT ALL DIM TO DIM SHEET

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: AD Date: 07/07/14  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07/07/14	3.0	One coffee was too small of .001" because I change the insert of finish Tools. The coffee add a tape on IT	UP 07.07.14 per QSI 042	BENDING STRESS IN CUFF IS LESS THAN IN TAPERED SECTION, & CUFF SECTION IS FAR STRONGER. TP-D350-748-3 & TP-D350-748-1 UNAFFECTED - TUBE OK	D.F. 07/07/14	EP 07/07/14	UP 07.07.14 per QSI 042	EP 07/07/14

NOTE: Date & initial all entries



Date: Thursday, 5/3/2007 11:24:12 AM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD UNDER REVIEW

Job Number: 32154A

Part Number: D350748141

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

MORI SEIKI

MORI SEIKI CNC LATHE LARGE



Comment: MORI SEIKI CNC LATHE LARGE

1-Turn second side as per Folio FA648

2-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D350-748-141.

3-Scribe Part & Batch as per Dwg D350-748-141

2F 02/07/14

6.0

QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

2F 02/07/14

7.0

QC8

SECOND CHECK



Comment: SECOND CHECK

Batch # is 3 ordered  
in 02/07/26

(X1)

8.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Remove all Machining Marks

JD 7-7-26

9.0

OUTSIDE SERV.10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: 4289

Heat Treat to min 180 KSI As per Dwg D350-748-141

(MIL-T-6736 OR AMS 2759-1C)

Sand Blast tube after Heat Treat

Possible Supplier: Vac Aero

Ensure Certificate of Conformity is attached

R/JLL 7.8.02

10.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformaty is attached

CP 7/08/24 @

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 5/3/2007 11:24:12 AM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD UNDER REVIEW

Job Number: 32154A

Part Number: D350748141

Job Number:



Seq. #: Machine Or Operation:

Description:

11.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

*2009-10-01*

12.0

BENDING

BENDING MACHINE



Comment: BENDING MACHINE

Bend tube as per Dwg. D350-748-141 using CNC bender program D350F and Folio FT

*EL 7-9-12*

13.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

*5 07/10/05*

14.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Drill Tube as per Dwg D350-748-141 Using DT8876 Drill Jigs

Set-up drill table as per QSI 010

2-Deburr

3-Engrave Part # and Batch # as per Dwg D350-748-141

4-Remove all marks from tube within limits of D350-748-141

5-Apply a light coat of LPS3 on the interior of tube

Batch: *M104161*

*EL 7-10-03*  
*AWM 07-10-03*  
*EL 7-9-12*

*(P12)*

15.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

*EL 07/10/05*

16.0

OUTSIDE SERV 10

OUTSIDE SERVICES -LG



Comment: Sub-Contracting OUTSIDE SERVICES

Issue P/O: *4787*

Stress relief at 375° for 5 hours

Magnetic Particle Inspect per ASTM E1444

Cadium Plate per AMS-QQ-P-416B, Class 1, Type 2

Embrittle relief at 375° for 8 hours, Chromate Treat

Possible Supplier: Southwest United Industries

Ensure Certificate of Conformity is attached

*07/10/11*

*(1)*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes ☒ No ☐ DQA: AD Date: 07/16/14  
 QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
07/16/14	#	one tube is too has one side of the height. off by <del>0.250</del> 0.125" RC Buler	<i>[Signature]</i> @xral	cut to mark the height even. cut 0.250" off side "B".	EL 7-16-5	<i>[Signature]</i> Hedlos	<i>[Signature]</i> @xral	<i>[Signature]</i> Hedlos

NOTE: Date & initial all entries

Date: Thursday, 5/3/2007 11:24:12 AM  
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## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD UNDER REVIEW

Job Number: 32154A

Part Number: D350748141

Job Number:



Seq. #:

Machine Or Operation:

Description :

17.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure certificate of conformity is attached

7/11/06 SP (X)

18.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

5 07/11/07

19.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside crosstube as per QSI 005 4.2

2-Prime Outside of Tube as per Dart QSI 005 4.2

7 ml 07 11 08 (1)

20.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Then, Wrap in plastic bag to protect from scratches

5 07/11/07

21.0

D35021

SUPPORT



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

SUPPORT

Batch: 32205

ml 07 11 13

22.0

D2856400

Abrasion Strip



Comment: Qty.: 1.2401 f(s)/Unit Total : 1.2401 f(s)

Abrasion Strip 7.10" long x2

Batch: 34642

ml 07 11 13

23.0

ALS41032225

Insert



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Insert

Batch: 100621

ml 07 11 13

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 5/3/2007 11:24:12 AM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD UNDER REVIEW

Job Number: 32154A

Part Number: D350748141

Job Number:



Seq. #:	Machine Or Operation:	Description :
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24.0	AN960JD10	Washer
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Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Washer

Batch: 105442

ml 07 11 13

25.0	MS2192020	Clamp (per MIL-DTL-8783C)
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Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Clamp (per MIL-DTL-8783C)

Batch: 102787

ml 07 11 13

26.0	MS27039110	Screw
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Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Screw

Batch: 18836

ml 07 11 13

27.0	LANDING GEAR 1	LANDING GEAR RESOURCE 1
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Comment: LANDING GEAR RESOURCE 1

1-Install Ground wire Insert, then insert screw and washer

2-Install Abrasion strips as per Dwg D350-748-141 & QSI 035.

3-Install supports Using Dt8876 as per Dwg D350-748-141, Torque to 60-80 IN-LBS

ml 07 11 13

28.0	QC5	INSPECT WORK TO CURRENT STEP
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Comment: INSPECT WORK TO CURRENT STEP

2011-13 (1)

29.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D350-748-241

Location:

PPP Rev:

AP 32154 6/7/11/24 0

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Date: Thursday, 5/3/2007 11:24:12 AM

User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: X-TUBE AS 350/355 HI FWD UNDER REVIEW

Job Number: 32154A

Part Number: D350748141

Job Number:



Seq. #:

Machine Or Operation:

Description :

30.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

DD 9/11/14 (1)

Job Completion



ca 8.11.14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

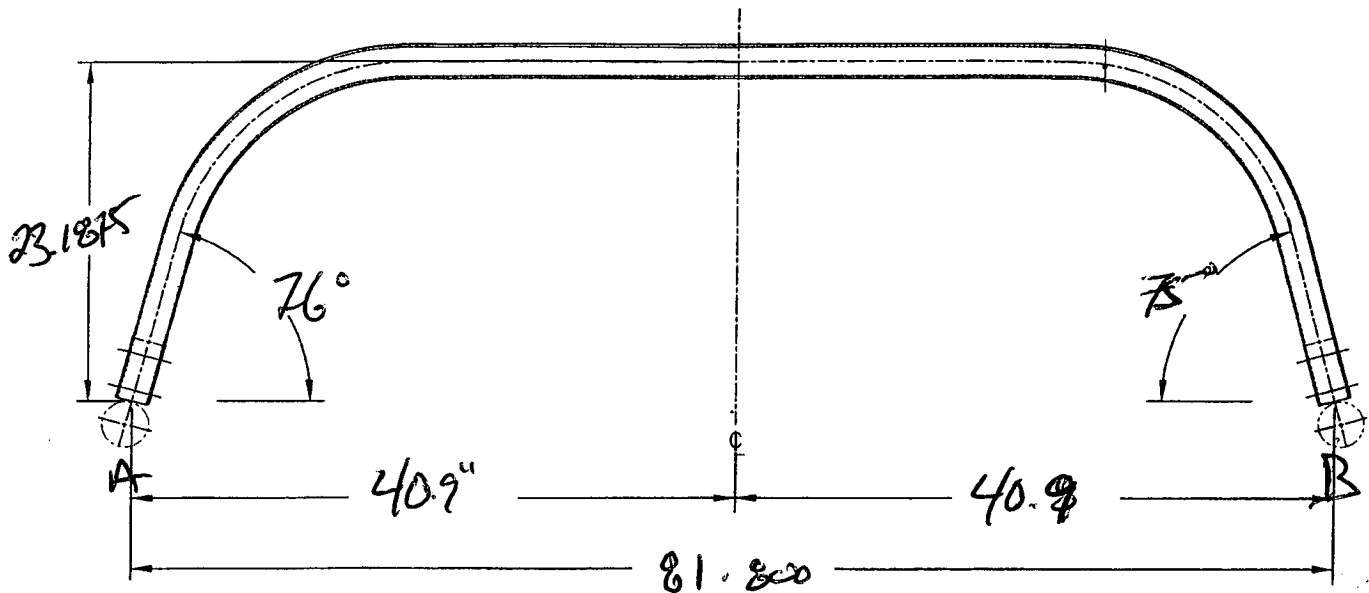
QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

DART AEROSPACE LTD		Work Order:	32154A
Description: Crosstube High Fwd (AS350/355)		Part Number:	D350-748-101
Inspection Dwg: D350-748-141 Rev: D		Page 1 of 1	

Required Dimension	Min	Max
Height	23.13	23.37
1/2 Span	40.78	41.02
Angle	75	77
Total Span	81.56	82.04



Comments
cut 0.25" off side "B".

QC15 Inspection	2/11/05
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	<i>[Signature]</i>

<b>DART AEROSPACE LTD</b>	<b>Work Order:</b>	32154A
<b>Description:</b> Crosstube Assembly (AS350/355 High Fwd)	<b>Part Number:</b>	D350-748-141
<b>Inspection Dwg:</b> D350-748-141 Rev: <i>ED</i>		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article
 ☐ Prototype

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.239				
	2.180	+0.005/-0.000	2.179				
	2.180	+0.005/-0.000	2.179				
	2.237	+0.005/-0.000	2.236				
	2.272	+0.005/-0.000	2.271				
	2.306	+0.005/-0.000	2.305				
	2.339	+0.005/-0.000	2.338				
	2.339	+0.005/-0.000	2.338				
	0.062	+/-0.010	.062				
	4.26	+/-0.030	4.26				
	R0.063	+/-0.010	.063				
	R0.50	+/-0.030	.500				
SIDE B	2.240	+0.005/-0.000	2.240				
	2.180	+0.005/-0.000	2.180				
	2.180	+0.005/-0.000	2.180				
	2.237	+0.005/-0.000	2.237				
	2.272	+0.005/-0.000	2.272				
	2.306	+0.005/-0.000	2.306				
	2.339	+0.005/-0.000	2.339				
	2.339	+0.005/-0.000	2.339				
	0.062	+/-0.010	.062				
	4.26	+/-0.030	4.26				
	R0.063	+/-0.010	.063				
	R0.50	+/-0.030	.500				
	110.27	+/-0.060	110.27				

<b>Measured by:</b> <i>J.S.</i>	<b>Audited by:</b>	<b>Prototype Approval:</b>	N/A
<b>Date:</b> 07/07/14	<b>Date:</b>	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	06.11.09	New Issue (P/O D350-748-101)	KJ/JLM <i>A</i>	<i>B</i>



DESIGN <i>qp</i>	DRAWN BY <i>qp</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>HA</i>	APPROVED <i>HA</i>	DRAWING NO. D350-748-141	REV. D SHEET 1 OF 3
DATE 06.10.31		TITLE CROSSTUBE (AS 350/355 HI FWD) NTS	
A	06.03.31	NEW ISSUE	
B	06.06.30	ADD D6017-115 & PRIME AND PAINT	
C	06.08.14	ADD CAD PLATING	
D	06.10.31	MAG. PARTICLE AND CAD PLATE AS MFD.	

RELEASED

06.10.31 *HA*

QTY	P/N	DESCRIPTION
X	D350-748-141	CROSSTUBE ASSEMBLY (AS 350/355 HI FWD)
1	D6017-115	CROSSTUBE (OR D6015-125)
2	D3502-1	SUPPORT
2	D2856-400-710	ABRASION STRIP
1	AELS-1032-225	INSERT
1	AN960JD10	WASHER
2	MS21920-20	CLAMP (PER DART SPEC. M-MS21920-20)
1	MS27039-1-10	SCREW

**D350-748-141 CROSSTUBE:**

- 1) MATERIAL: MANUFACTURED FROM D6017-115 OR D6015-125  
FINISHED LENGTH =  $110.27 \pm 0.06$
- 2) MACHINE PER MACHINING DETAIL ON PAGE 3. BLEND OUT ALL EDGES FROM MACHINING LONGITUDINALLY, TRANSITIONS SHOULD BE SMOOTH. NOTE: ALL HOLES ARE DRILLED AFTER BENDING.
- 3) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 4) BEND PROGRESSIVELY WITH A MINIMUM OF 7 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 5) HEAT TREAT TO MIN. 180 KSI PER MIL-T-6736 OR AMS 2759-1C AFTER TURNING
- 6) FINISH: MAGNETIC PARTICLE INSPECT PER DART QSI 038 4.2  
CADMIUM PLATE PER AMS-QQ-P-416B, CLASS 1, TYPE II  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 7) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE. WHEN DRILLING HOLES EXTREME CARE MUST BE TAKEN AND CAREFUL DEBURRING PERFORMED TO ENSURE A CLEAN HOLE WITH NO CRACKING/CHIPPING/GROOVES.
- 8) INSTALL D2856-400-710 ABRASION STRIP WITH A GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D3502-1 SUPPORT, PER QSI 035.
- 9) TORQUE MS21920-20 CLAMPS 60 TO 80 IN-LB
- 10) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 11) ALL DIMENSIONS ARE IN INCHES
- 12) PART IS SYMMETRIC ABOUT CENTERLINE EXCEPT FOR  $\varnothing 0.297$  HOLE.

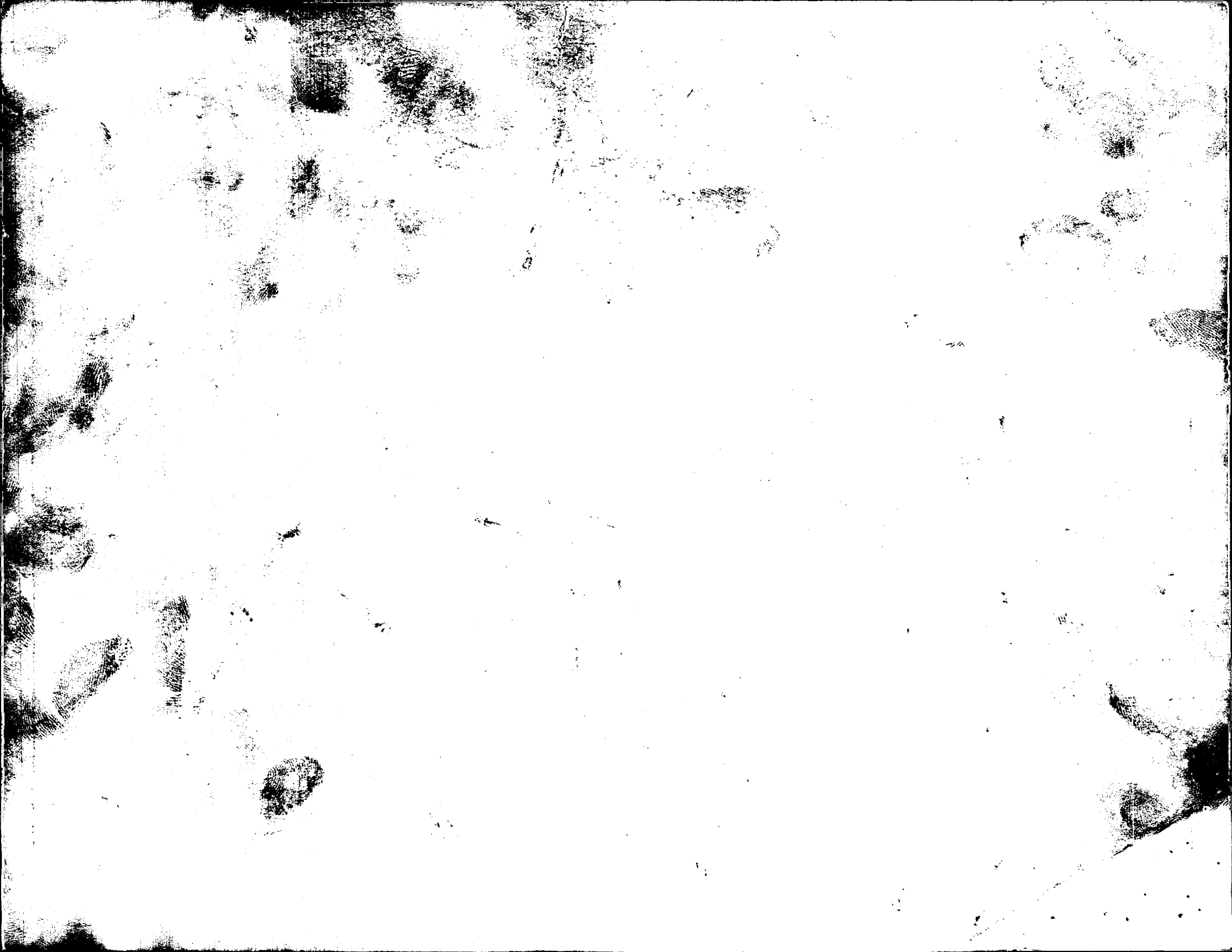
**UNDER REVIEW**

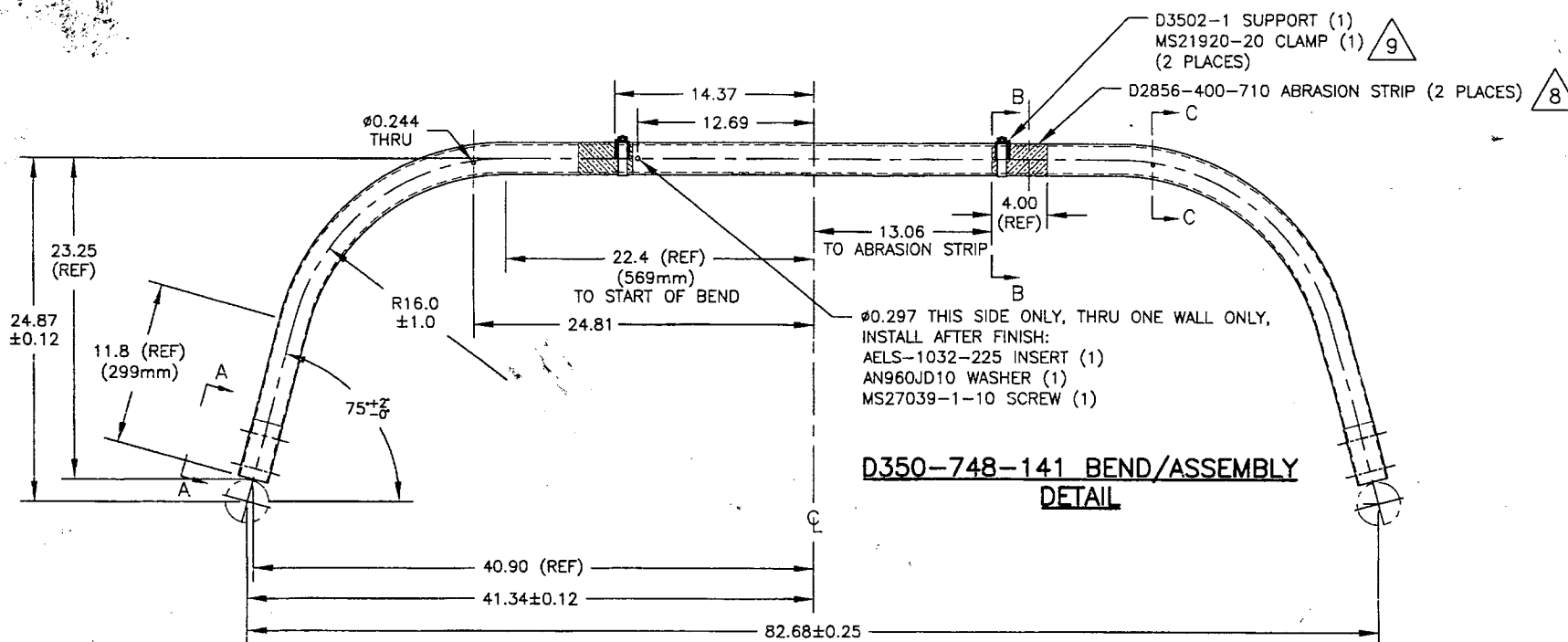
07.02.16/14  
CUFF BEING REDUCED

OK *qp* 07.03.07

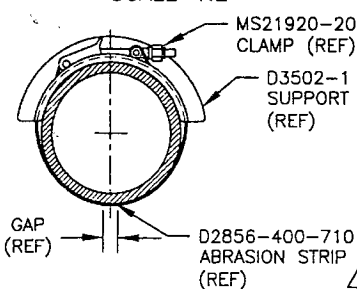
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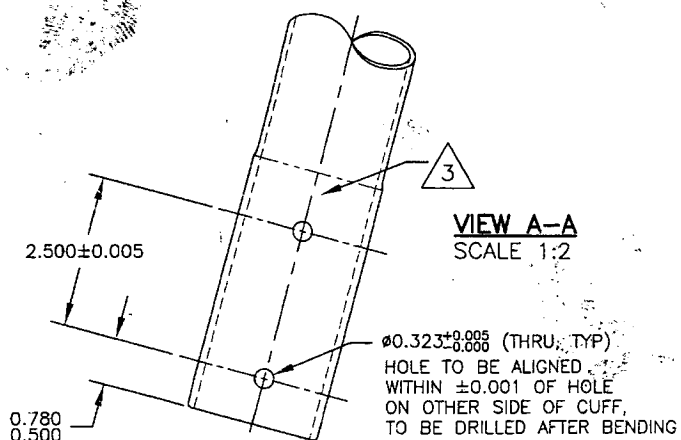
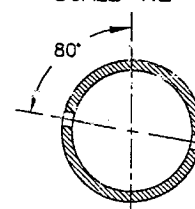




**SECTION B-B**  
SCALE 1:2



**SECTION C-C**  
SCALE 1:2



**UNDER REVIEW**

07.02.16

**RELEASED**

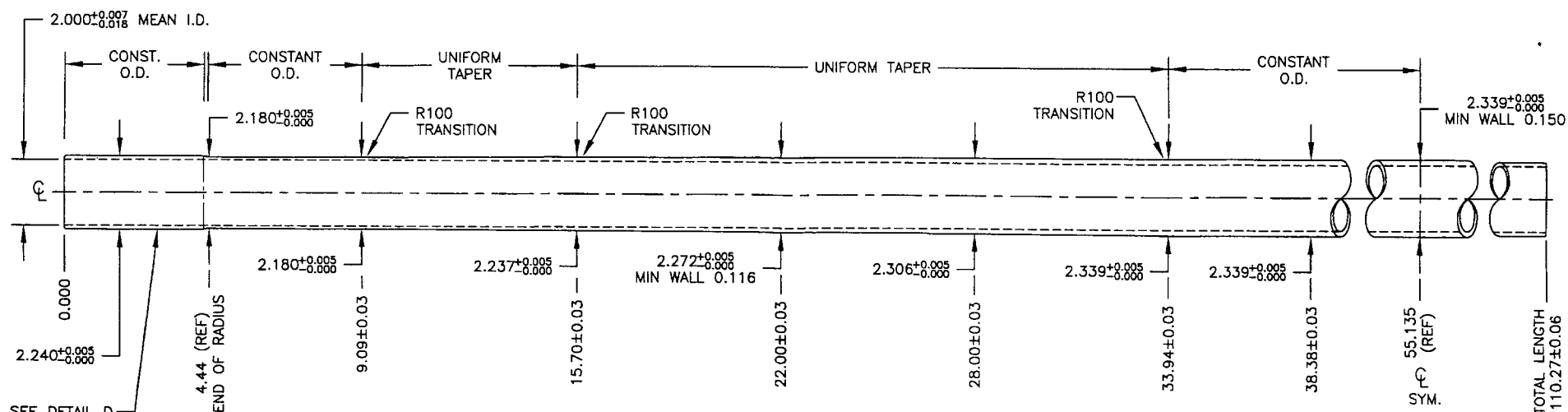
06.10.31

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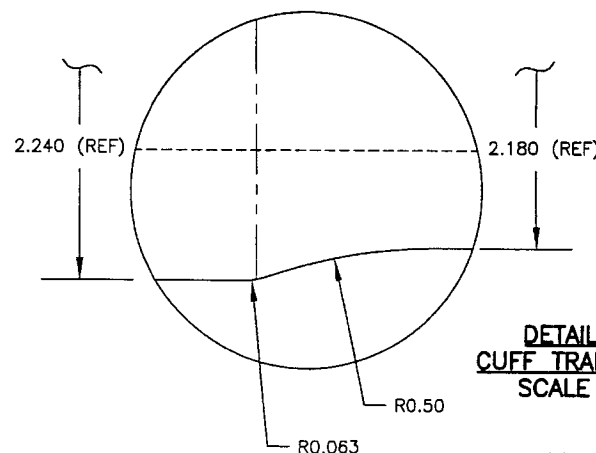
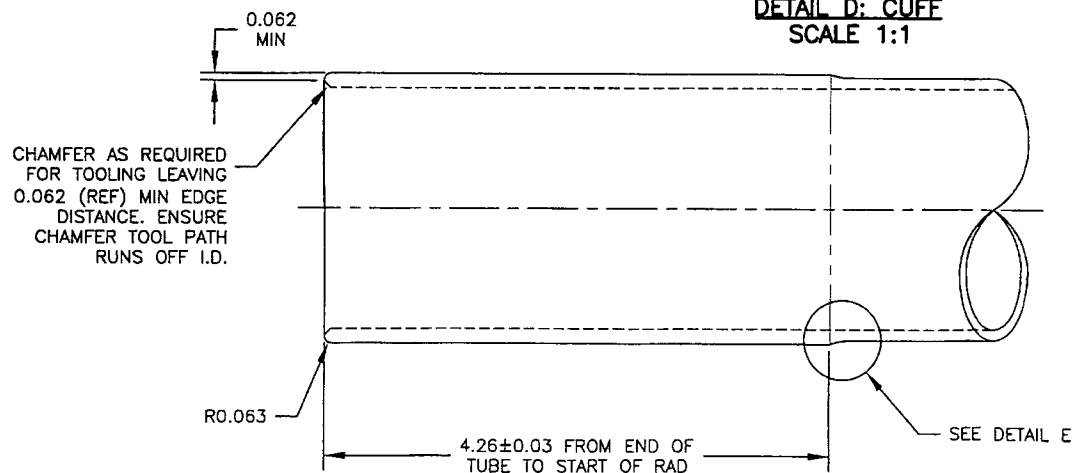
DESIGN	q7	DRAWN BY	q7	<b>DART</b>	DART AEROSPACE LTD. WARRICKSLEY, ONTARIO, CANADA
CHECKED	#	APPROVED	#	DRAWING NO.	0350-748-141
DATE	06.10.31	TITLE	CROSSTUBE (AS 350/355 HI FWD)	REV. 0	SHEET 2 OF 3
				SCALE	1:1

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WITHOUT NOTICE  
WORK ORDER  
NO. 32154A



**D350-748-141 MACHINING DETAIL**

**DETAIL D: CUFF  
SCALE 1:1**



**DETAIL E:  
CUFF TRANSITION  
SCALE 9:1**

**RELEASED**  
06.10.31

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DESIGN 90	DRAWN BY 90	<b>DART</b> DART AEROSPACE LTD. HAMPSHIRE, ONTARIO, CANADA	REV. 0
CHECKED #	APPROVED #	DRAWING NO. D350-748-141	SHEET 3 OF 3
DATE 06.10.31	TITLE CROSSTUBE (AS 350/355 HI FWD)	SCALE 1:3	

NO. 321514  
WORK ORDER  
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**VAC AERO**  
INTERNATIONAL INC.

# PACKING SLIP

OAK 89868-1



HEAD OFFICE  
1371 S EERS ROAD, OAKVILLE, ONTARIO  
CANADA L6L 2X5  
TEL: (905) 827-4171 FAX: (905) 827-7489



QUEBEC DIVISION  
7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC  
CANADA H4S 1C5  
TEL: (514) 334-4240 FAX: (514) 334-6269

GST No.: R105468102

08/22/2007

MM / DD / YYYY

PAGE: 1

1DAR01

BILL TO: DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
08/22/2007		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
00004289		COD

LN	PART NO	DESCRIPTION	UOM	QTY ORDERED	QTY SHIPPED	B/O QTY
01	D350-718	-141/241	EA	10	10	0
		Process Specifications: Procedure: 4353 HEAT TREATED TO 180 KSI PER AMS 2759-1C 100% HARDNESS CHECKED AS PER ASTM E-18 HRC 40-45 MATERIAL: 4130  SAND BLASTED  1 PIECE P/N D350748141 B32157, 1 PIECE P/N D350748241 B32161 1 PIECE P/N D350748141 B32153, 1 PIECE P/N D350748241 B32160 1 PIECE P/N D350748141 B32155, 1 PIECE P/N D350748241 B32159 1 PIECE P/N D350748141 B32154, 1 PIECE P/N D350748241 B32162 1 PIECE P/N D350748141 B32156, 1 PIECE P/N D350748241 B32158				
02	MC	MINIMUM CHARGE 375 LBS @ \$2.26/LB		1	1	0
03	GB	GRIT BLASTING		1	1	0

No claims for shortage in weight or count will be entertained, unless presented within 5 working days after receipt of materials by customer.



VACUUM BRAZING · HEAT TREATING · SPECIAL PROCESSING · FURNACE EQUIPMENT  
TURBINE COMPONENT OVERHAUL · PLASMA AND OTHER COATINGS





**VAC AERO**  
INTERNATIONAL INC.

**RELEASE NOT**

GST No. : R105468102

OAK 89868-1



HEAD OFFICE  
1171 SPEERS ROAD, OAKVILLE, ONTARIO  
CANADA L6L 2X5  
TEL: (905) 827-4171 FAX: (905) 827-7489



2009 WYECROFT ROAD, UNIT B  
OAKVILLE, ONTARIO  
CANADA L6L 6J4  
TEL: (905) 827-7377 FAX: (905) 827-1380



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7450 RUE VERITE STREET, ST. LAURENT, QUEBEC  
CANADA H4S 1C5  
TEL: (514) 334-4240 FAX: (514) 334-6269

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PAGE : 1

BILL TO: 1DAR01  
DART AEROSPACE LTD.  
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SHIP TO: DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
08/22/2007		
CUSTOMER P/O No.	JOB No.	ORIGIN
00004289		
		TERMS
		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
D350-748	-141/241	EA	10	10	
Process Specifications: Procedure: 4353 HEAT TREATED TO 180 KSI PER AMS 2759-1C 100% HARDNESS CHECKED AS PER ASTM E-18 HRC 40-45 MATERIAL: 4130  SAND BLASTED					
<div style="border: 2px solid black; padding: 5px; display: inline-block;"> <b>100% HARDNESS TESTED</b>  <i>10 P.S.</i>  <u>42/43 HRC</u> </div>					
1 PIECE	P/N D350748141 B32157, 1 PIECE	P/N D350748241 B32161			
1 PIECE	P/N D350748141 B32153, 1 PIECE	P/N D350748241 B32160			
1 PIECE	P/N D350748141 B32155, 1 PIECE	P/N D350748241 B32159			
1 PIECE	P/N D350748141 B32154, 1 PIECE	P/N D350748241 B32162			
1 PIECE	P/N D350748141 B32156, 1 PIECE	P/N D350748241 B32158			

I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

*Laura Robinson*  
Authorized Q.C. Inspector



VACUUM BRAZING - HEAT TREATING - SPECIAL PROCESSING - FURNACE EQUIPMENT  
TURBINE COMPONENT OVERHAUL - PLASMA AND OTHER COATINGS





**CERTIFICATE OF  
CONFORMANCE**

**CADORATH PLATING CO. LTD.  
2150 LOGAN AVENUE  
WINNIPEG, MANITOBA R2J-0J1**

**DATE:** Oct-31-2007

**CONSIGNED TO:** Dart Aerospace Ltd.  
1270 Aberdeen St  
Hawksbury, ON K6A 1K7

**W/O #:** 70675

**INVOICE #:** 36541

**CONTRACT OR  
PURCHASE ORDER # PO4787**

**DESCRIPTION:** SKID

**QTY** 4

**P/N #** D350748141

**S/N #** B3215

**CADMIUM PLATE IAW AMS-QQ-P-416 REV. B TYPE 2 CLASS 1. MPI  
IAW ASTM-E-1444. BAKE HEAT CHART #8407 & #8431.**

**CERTIFICATE:** I certify that the items indicated here on have  
been inspected and tested and conform to all specifications  
and requirements detailed on the contract or purchase order.

**Approved Inspector:**

*William Maruszewski*





**VAC AERO**  
INTERNATIONAL INC.

# PACKING SLIP

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HEAD OFFICE  
1371 SHEERS ROAD, OAKVILLE, ONTARIO  
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7450 RUE VÉRITÉ STREET, ST. LAURENT, QUÉBEC  
CANADA H4S 1C5  
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GST No.: R105468102

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DART AEROSPACE LTD.  
1270 ABERDEEN ST.  
HAWKESBURY, ON

SHIP TO: DART AEROSPACE LTD.  
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HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
08/22/2007		ORIGIN
CUSTOMER P/O No.	JOB No.	TERMS
00004289		COD

LN	PART NO	DESCRIPTION	UOM	QTY ORDERED	QTY SHIPPED	B/O QTY
01	D350-718	-141/241	EA	10	10	0
		Process Specifications: Procedure: 4353 HEAT TREATED TO 180 KSI PER AMS 2759-1C 100% HARDNESS CHECKED AS PER ASTM E-18 HRC 40-45 MATERIAL: 4130  SAND BLASTED  1 PIECE P/N D350748141 B32157, 1 PIECE P/N D350748241 B32161 1 PIECE P/N D350748141 B32153, 1 PIECE P/N D350748241 B32160 1 PIECE P/N D350748141 B32155, 1 PIECE P/N D350748241 B32159 1 PIECE P/N D350748141 B32154, 1 PIECE P/N D350748241 B32162 1 PIECE P/N D350748141 B32156, 1 PIECE P/N D350748241 B32158				
02	MC	MINIMUM CHARGE 375 LBS @ \$2.26/LB		1	1	0
03	GB	GRIT BLASTING		1	1	0

No claims for shortage in weight or count will be entertained, unless presented within 5 working days after receipt of materials by customer.



VACUUM BRAZING - HEAT TREATING - SPECIAL PROCESSING - FURNACE EQUIPMENT  
TURBINE COMPONENT OVERHAUL - PLASMA AND OTHER COATINGS





**VAC AERO**  
INTERNATIONAL INC.

**RELEASE NOT**

GST No.: R105468102

OAK 89868-1



HEAD OFFICE  
1571 SPEERS ROAD, OAKVILLE, ONTARIO  
CANADA L6L 2X5  
TEL: (905) 827-4171 FAX: (905) 827-7489



2009 WYECROFT ROAD, UNIT B  
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HAWKESBURY, ON

K6A 1K7

K6A 1K7

DATE SHIPPED	SHIP VIA	F.O.B.
08/22/2007		
CUSTOMER P/O No.	JOB No.	ORIGIN
00004289		
		TERMS
		COD

PART No.	DESCRIPTION	UOM	QTY ORD	QTY SHPD	TEST RESULTS
----------	-------------	-----	------------	-------------	--------------

D350-748

-141/241

EA 10 10

Process Specifications: Procedure: 4353

HEAT TREATED TO 180 KSI PER AMS 2759-1C

100% HARDNESS CHECKED AS PER ASTM E-18

HRC 40-45

MATERIAL: 4130 ✓

SAND BLASTED

**100% HARDNESS TESTED**

10 PCS.

42/43 HRC



1 PIECE P/N D350748141 B32157, 1 PIECE P/N D350748241 B32161  
1 PIECE P/N D350748141 B32153, 1 PIECE P/N D350748241 B32160  
1 PIECE P/N D350748141 B32155, 1 PIECE P/N D350748241 B32159  
1 PIECE P/N D350748141 B32154, 1 PIECE P/N D350748241 B32162  
1 PIECE P/N D350748141 B32156, 1 PIECE P/N D350748241 B32158

I hereby certify that the material covered by this release note has been inspected and tested and conforms to all specifications relevant thereto in accordance with the conditions of the contract / or purchase order.

ON BEHALF OF VAC AERO INTERNATIONAL INC.

*Diana Robinson*  
Authorized Q.C. Inspector



VACUUM BRAZING - HEAT TREATING - SPECIAL PROCESSING - FURNACE EQUIPMENT  
TURBINE COMPONENT OVERHAUL - PLASMA AND OTHER COATINGS



HEAT